



DE-1000™ FHD™ **Full Hydraulic Drive**



Part of the Derrick DE-1000™ Centrifuge Series

DE-1000™ FHD™ CENTRIFUGE

PART OF THE DE-1000™ SERIES

The Derrick DE-1000™ FHD™ (Full Hydraulic Drive) can handle a wide variety of applications. This unit is designed for centrifuge duties where the feed characteristics are either unknown or variable. Proven in the field, this machine has processed twenty pound per gallon weighted oil field mud as well as flocculated ultrafine solids slurries. The bowl assembly is capable of rotating at any speed from 0 to 3400 RPM, producing an internal centrifugal acceleration in excess of 2300 G's.

The DE-1000 FHD is installed on a rugged portable skid that includes a two point effluent discharge for easy setup. All rotating assembly components are manufactured from corrosion resistant 316 grade and high strength stainless steel alloy materials. Liquid and solid bowl heads are machined from forgings while the bowl and conveyor hubs are constructed from centrifugally cast stock. The drive system uses a 50 horsepower explosion-proof motor to drive the bowl via a hydrostatic pump/motor, and the conveyor with a Rotodiff by Viscotherm AG. On high specific gravity solids loading applications, the Rotodiff may apply up to 45 horsepower to drive the conveyor. On high solids volume and high speed applications, the hydrostatic motor may also require up to 45 horsepower to drive the bowl. The large fan-cooled radiator is corrosion resistant to allow trouble-free operation in hot corrosive environments.

The control panel is designed for ease of operation. The panel has one speed control each for the bowl and conveyor. A tachometer and a flow meter display the speed of the bowl and the differential speed of the conveyor, respectively. Pressure gauges are included to sense the torque ("loading") of both the bowl drive and the conveyor.

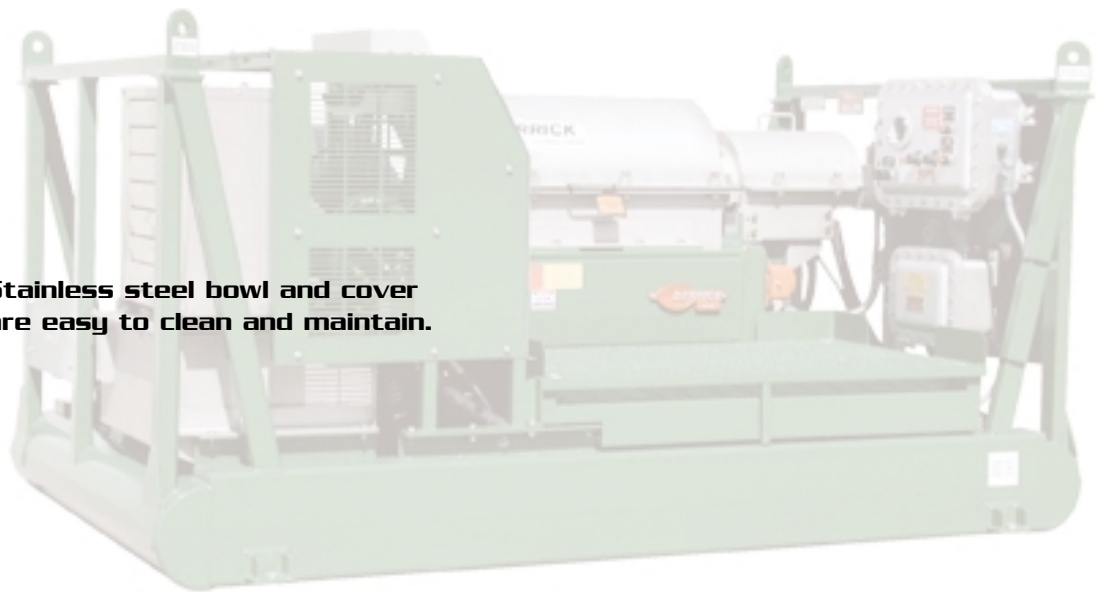
The FHD is nearly impossible to "pack off." The unit senses excessive torque and temporarily shuts off the feed pump. If torque continues to increase, the unit automatically "boosts" the conveyor speed to clear solids. Once the torque drops to a "safe" level, the feed pump automatically restarts. If the conveyor becomes jammed with an oversized object, the unit automatically shuts down and turns off. The hydraulic system is protected with overload pressure relief valves. As an additional safety precaution, all units are wired with a vibration shut down switch and a low level/high temperature oil shut down switch. The speed of the bowl can be adjusted while the unit is operating from 0 to 3400 RPM. Independently, the conveyor can also be adjusted while the machine is operating from 3 to 90 differential RPM from the bowl.

The versatile DE-1000 FHD with an axial flow conveyor is ideally suited for environmental processing. The speed controls allow the operator to fine tune the machine for the desired output. This can be critical when using flocculants as it permits the operator to set the speed as high as possible without shearing the flocculant. The axial flow conveyor diverts the feed to protect the fragile separated solids in the feed zone. The conveyor design, coupled with variable speed control, significantly reduces the internal turbulence thus improving the separation efficiency inside the bowl. With low specific gravity solids, these features can reduce both time and flocculant costs.

The individual components of the DE-1000 are dynamically balanced to exceed the ISO 1940 balance quality grade of G-1.0. The total assembly easily exceeds the G-2.5 quality standard.

**The new effluent ports provide
fast precise pond depth settings.**

**Stainless steel bowl and cover
are easy to clean and maintain.**



**Wear inserts and case plows,
designed to protect your
investment, are matched for
simple field replacement.**

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SYSTEM CHARACTERISTICS

CENTRIFUGE

Bowl size:	14" (356 mm) Diameter
Bowl type:	Contour cylinder
Conveyor:	Helical (Radial/ Axial)
Effluent ports:	Variable – Eccentric
Differential conveyor speed:	3-90 RPM
Bowl Speed Range:	0-3400 RPM [Maximum G's: 2300]
Sigma (Σ) maximum:	4.34 x 10 ⁶ in ² (2800 m ²)
Electrical:	
Bowl Drive:	50 Horsepower (37 kw) 480V
Pump Control Circuit:	15 Horsepower (11 kw) 480V [Maximum]
Scroll:	
System:	Counter-current
Lead direction:	Left
Related movement to bowl:	Lagging

ADVANTAGES

- Suitable for use in Class I, Division 1, Group "C & D" areas.
- Integrated system - bowl/scroll drive system built into skid.
- Increased fluid throughput.
- Reduced electrical load.
- Less maintenance.
- Reduced scroll wear.
- No shear pins.
- No back drive - eliminates the back drive brake system.
- No gear box - torsional vibration is reduced.
- Automatic cleaning cycle initiated during routine shutdown.
- Higher operating torque capacity.
- Direct RPM and pressure readouts for bowl and conveyor drives.
- Investment cast stellite #12 wear inserts, case plows and feed accelerator.
- Reversible conveyor feed nozzles with replaceable tungsten carbide liners.
- Conveyor tiles with 93.3 "A" Rockwell scale average hardness installed over the **full length** of the conveyor.
- Window with hour meter - to view hours of operation.

OPTIONS LISTS

- Conveyor Type: Radial flow or Axial flow.
- Conveyor Wear Surfaces: Tungsten carbide tiles or hard surface alloy.
- Electrical Configurations: 380/460 VAC – 50/60 Hz.

The hydraulic control system includes two types of safety systems:

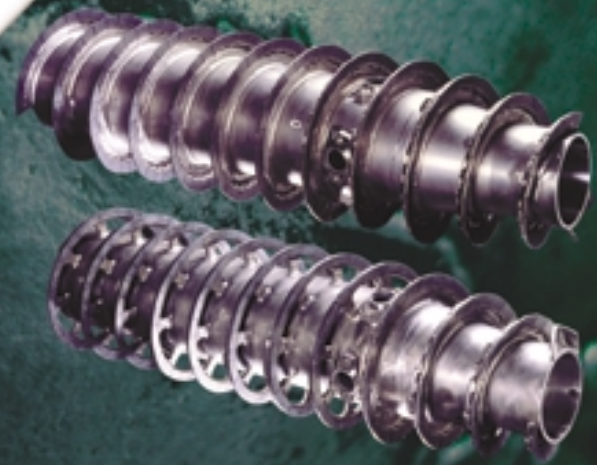
1. Automatic speed boost of scroll to prevent overloading
2. Automatic unit shutdown under the following:
 - excessive torque (if 1 is unsuccessful)
 - overheated hydraulic fluid
 - excessive vibration
 - low hydraulic fluid



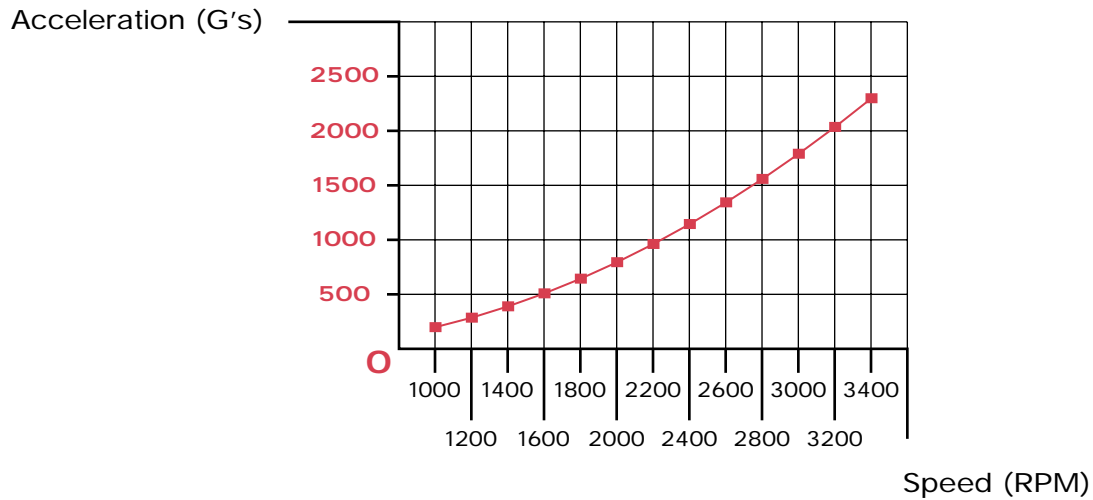
Filters and gauges are protected, yet easily accessible.



Radial flow conveyor (top) and Axial flow conveyor (bottom) provide different levels of agitation in removing solids.

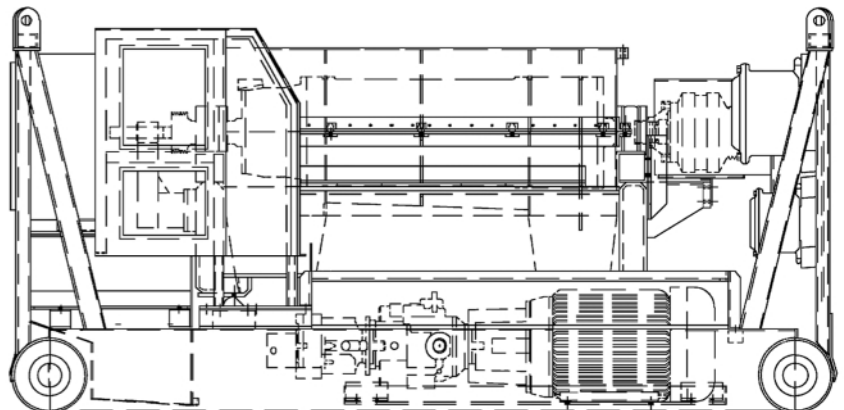
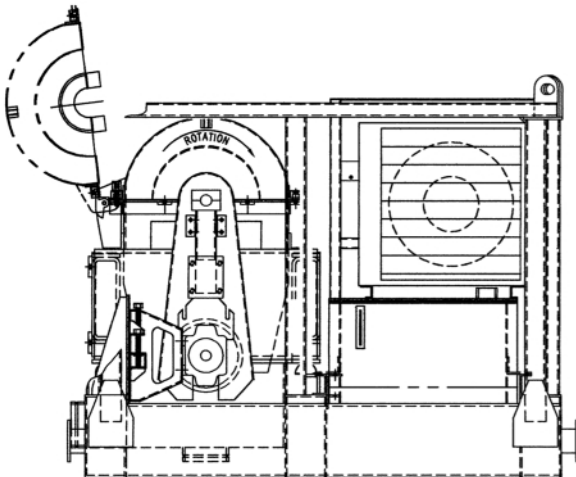


G-Force as a Function of Bowl Speed on a 14" Diameter Bowl



DE-1000™ FHD™ CENTRIFUGE DIMENSIONS

Height:	57" (1448 mm) – Lid closed	70 9/16" (1792 mm) – Lid open
Width:	75" (1905 mm) – Lid closed	83" (2108 mm) – Lid open
Feed Height:	40 1/4" (1022 mm)	
Length:	115" (2921 mm)	
Weight:	9,000 lbs (4050 kg)	



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